A Survey of Telemedicine Applications in Italy

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Italy has a long tradition of telemedicine experiments. They may be dated back to the early Seventies, when the hospital of the Catholic University of Rome set up a teleconsulting service for treating intoxications by poisons.
In 1976 the University of Bologna realized a prototype system for ECG acquisition and transmission via telephone line. In the same year CSELT (the research center of the public telecommunication provider) set up a teleconsulting service between the hospital San Giovanni in Turin and the nearby hospital of Susa.

Most of the experiments carried out are in the field of teleconsulting.
The Ministry of Health sponsored in 1988 the project *Telecar* for teleconsulting of cardiac pathologies in Latium region. The project became operative at the end of 1989 and lasted three years.
The *Telemism* project has been conceived for the peculiar needs of the 32 Italian small islands.
Teleradiology is the other prevailing applications field in Italy. In the mid Eighties the Ministry of Health sponsored the *Telecos* project which started with a pilot experience in 1983 linking Rome with the Radiology Departments at the universities of Chieti, Pisa, Florence and Messina. In 1985 the Ministry selected three Italian regions (Friuli, Marche and Basilicata) and set up there 25 centers linked with other health care units.
The local health unit of Pistoia (Tuscany) implemented a telemedicine service linking the radiology department of the hospital with the first aid unit of the same hospital which is physically far from the department. The radiologists receive an image digitalized by a high-resolution scanner and send back their report via fax. The service has been extended to cover also the hospital San Marcello (29 Km from Pistoia) lccated near a ski resort.

The provision of dialysis at home or in specialized centers has been experimented in several regions. The clinical data of the patient are sent via telephone line to a reference center where a remote monitoring is performed.
The Institute for Clinical Physiology of the CNR in Pisa is responsible of a project concerning home telemonitoring of cardiopathic patients. The experiments – carried on in Tuscany – involve the use of a particular device able to record ECGs and transmit them to the pilot center in Pisa via PSTN.
A portable device – the "Cardiobip" – has also been realized. When activated by the patient it records his/her ECG and stores it in a local memory. Subsequently the ECGs collected during the day can be sent to the center where there is an expert system for their automated preliminary analysis. It was also provided to the components of the expedition to Everest who transmitted by satellite their ECGs to Pisa.

Several PACSs are going to be experimented in Italy. A MAN has been installed between Florence and Pisa allowing the exchange of high-resolution diagnostic images between the radiology departments of the two universities. In Trieste two hospitals are connected by an optical fiber and the department of radiology is linked to the bio-engineering service center and the other medical departments. Other PACS are installed in Milan (National Oncology Institute) and at the University Hospital of L'Aquila.
Two further applications are going to be realized. In Bologna an optical fiber will allow the exchange of diagnostic images related to child epilepsy between two hospitals. In Turin several departments of the hospital Molinette will be linked to the PACS which will eventually be integrated into the MAN which has been foreseen.

Despite the relevant technological advances of the last decade and the good figures in terms of cost-benefit analysis, the diffusion of telemedicine services is still not adequate to the needs of health care in Italy.
However the scenario is rapidly changing. Since 1995, regions are financially independent from the State and the DRG system is introduced for reimbursing Local Health Districts, hospitals, teaching hospitals and scientific centers providing care. It is envisaged that cost containment will become a prominent issue and telemedicine could play an important role in it.

The Ministry of Research – having recognized the potentialities of telemedicine for improving the quality of health care and reducing costs – has launched a national plan for financing research and training. It is predicted that the strong financial support given by the government (about $ 60 million) will enable telemedicine to have a strong impact on the national health care systems.

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